O2ECOLOGY

Technical Memorandum

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SUBJECT:	**Opinion of the Protected Plants Flora Survey Trigger Map**		

1.   Background

When a project is not exempt from the Nature Conservation Act there is a requirement for a proponent to consult the Protected Plants Flora Survey Trigger Map prior to any clearing of protected plants to determine if the proposed clearing is within a high risk area. In a high risk area, a flora survey must be undertaken and a clearing permit may be required for clearing endangered, vulnerable and near threatened plants ('EVNT plants') and their supporting habitat.

A crucial component of the process for undertaking flora surveys of EVNT plant species is the Protected Plants Flora Survey Trigger Map (the "trigger map") produced by the Department of Environment and Heritage Protection (EHP) (see **Figure 1**). This map indicates "high risk" areas where there is a chance that EVNT plant species may occur with the onus on the proponent to undertake a flora survey by a suitably qualified person if their proposed clearing area occurs within one of these areas. The on-ground flora surveys are to be undertaken in accordance with the Protected Plant Flora Survey Guidelines (EHP, 2014).
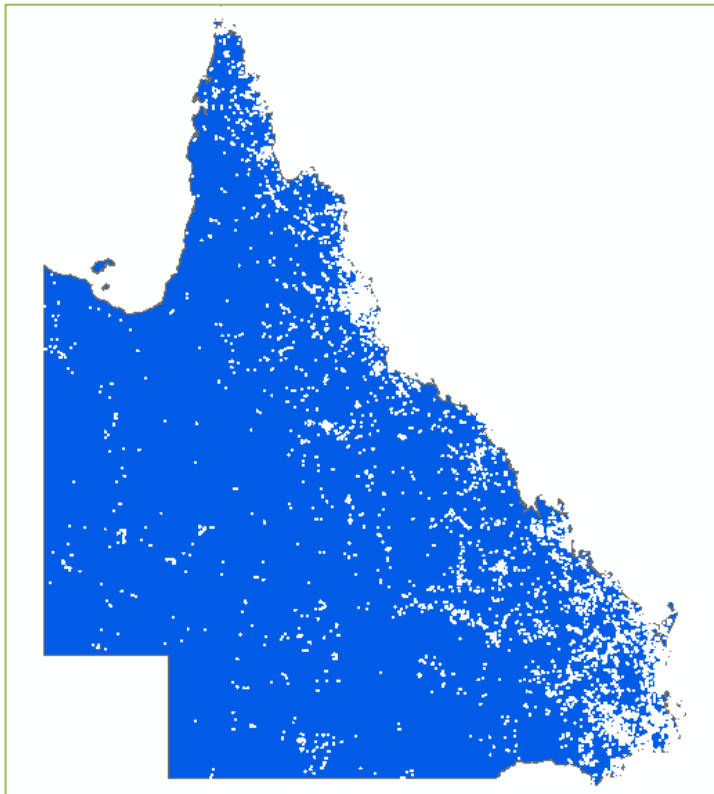

Figure 1. The Protected Plants Flora Survey Trigger Map (extracted March 2014). High risk areas are mapped as white points.

As of March 2014, there are 2,405 polygons mapped as high risk areas covering some 3.5% of the total land area of Queensland. These polygons represent 2km buffered areas around known populations of EVNT plant species. Where buffers overlapped, the shared areas have been dissolved and smoothed to represent a single high risk area.

According to the metadata document issued with the digital data, point-locations of EVNT plant species are sourced from a range of datasets including:

- HERBRECS
- Corveg
- WildNet

- Regional office databases/agency files
- Local naturalists/naturalist clubs
- Expert panels.

The precisions of these records are ≤2000m and only relatively recent records (post-1950) have been considered.

2. Problems with the trigger map

One of the major assumptions, and fundamental flaws, of the trigger map is that the government has a good understanding of where a lot of the EVNT plant populations occur. As indicated by the metadata document, point locations are sourced from various datasets. Primary of these is the Queensland Herbarium's HERBRECS specimen database.

The HERBRECS database is based on herbarium specimen records and it is noted that the post-1950 criterion is necessary for geo-positional accuracy. However, The HERBRECS database does not document every population of EVNT species in the State and is quite biased to areas of public access (gazetted roads, 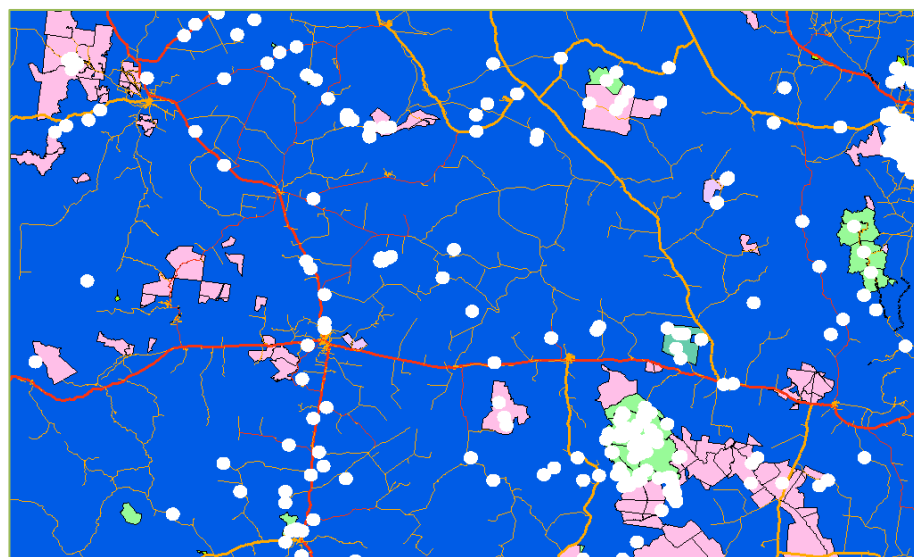National Parks, State Forests etc). **Figure 2** (left) illustrates the main roads and protected area estate in proximity to Emerald with the position of the high risk trigger areas. As can be seen in this figure, there appears to be a fair degree of bias towards areas of public access.

Figure 2. High risk areas (white areas) mapped in proximity to Emerald in the Brigalow Belt. Main roads and the protected area estate are illustrated. Note the proximity of some high risk areas to roads and the protected area estate.

Using simple spatial analysis we find that 1,893 of the 2,405 high risk polygons are within 500m of a main road (road class 2 – 4) or intersect a protected area estate (National Park, State Forest etc). This represents 78% of all high risk areas falling in proximity to these areas. The remaining 22% of polygons represent approximately 0.75% of the land area of Queensland.

For a large proportion of the State, no detailed botanical assessments have been undertaken or, if surveys have been undertaken, they are not of a standard necessary to detect certain species. As a consequence no records of EVNT plants may exist in certain areas even though EVNT species may indeed occur there. Under the trigger map system, an absence of an EVNT record outside of the high risk area will effectively eliminate the need for a flora survey to support a clearing permit. This is highly likely to lead to clearing of threatened flora.

A trigger map based solely on buffered point locations is fundamentally flawed in its approach. As many of the background sources for localities are based on points, they do not provide a predictive model of the habitat required for an EVNT species. As a consequence of this, those areas outside of the high risk area that support suitable habitat for a particular EVNT plant species will not trigger a flora survey. The more of these areas allowed to be cleared would mean that more species will come under threat or current EVNT species will be further endangered.

Furthermore, mapped high risk areas do not identify the EVNT plant species being buffered and as a consequence it is not known which EVNT species could fall within the high risk area. This is problematic in that it will hinder the identification of preferred habitat within the high risk area with a consequence being time wasted in the field searching non-preferred habitat.

Additionally, the knowledge of the Queensland flora is far from complete with large areas of the State under-surveyed botanically. Between 30 and 50 new plant species are discovered in Queensland each year and until these new species are formally described and a conservation status afforded to them, the species are not included on the EVNT list. These species, which are potentially of conservation value, could therefore be highly threatened by clearing. For example, a probable new genus of plant was discovered by a consultant botanist north of Emerald. At present, the location of this collection falls outside of the trigger area and since it is an undescribed species, it has not been allocated a conservation status. There is a definite risk that this newly discovered genus could be legally cleared as it does not occur within a trigger area and would not warrant a flora survey.

From the previous point, a time lag will always be problematic in the trigger map. Like many other consultant botanists, we are able to access areas that have not been previously collected or floristically assessed and as such often discover new populations of EVNT plant species. These are usually collected and submitted to the herbarium for confirmation and incorporation. The herbarium has a backlog for both identification and incorporation so a specimen of an EVNT species may take considerable time to be incorporated in the HERBRECS system and the collection. It is unknown how often updated HERBRECS records will be supplied to EHP for incorporation into the trigger map but I suspect it could be annually. As a result of all of these factors, an EVNT record may take well over a year before appearing on the trigger map.

The WildNet database is also problematic as it consists of observations that come from a wide range of public sources. As a consequence there is no control over quality and the veracity of individual records may vary. While WildNet (and the publically available Wildlife Online) is a useful tool for the planning of flora surveys, it merely represents a snapshot of where flora surveys have been conducted in the past and does not form a complete picture of where all populations of EVNT plant species are located across the State. Environmental consultants are only required to submit their scientific returns at the same time of year annually. Given it will take time for Departmental staff to process and enter large volumes of data into WildNet it will follow that the WildNet database will perpetually be incomplete rendering whatever published version of the trigger map obsolete regardless of the publication date and will result in populations of EVNT flora species not being represented on the map as a high risk area.

3.   Possible fixes for the trigger map

As a firm believer of constructive criticism, I offer the following solutions to the inadequacies of the trigger map.

Most environmental consultants undertake rigorous desktop analysis and literature review prior to undertaking ecological field surveys. A part of this standard approach is determining the likelihood of occurrence of EVNT plant species, based on their known habitat requirements and geographic distribution. By researching the known habitat requirements of an EVNT plant species and referring to the Regional Ecosystem mapping over an area, a likelihood of occurrence rating can be assigned to a given species. This allows for field surveys to target specific vegetation types or habitats to determine whether EVNT species occur on a project site. Essentially, this has been a form of *ad hoc* modelling.

By modelling of a few datasets, EHP could produce a predictive map based on Regional Ecosystem, vegetation community, altitude, soil and/or position in landscape. The government already has done this and has produced the Essential Habitat layer. This mapping layer consists of both buffered records and species habitat models. It escapes me that such a process could not have been undertaken (or at least incorporated) for EVNT plant species.

Another possible suggestion would be for alternate buffer zone areas. For example, densely populated, highly cleared areas (such as that which corresponds to the "fragmented" areas used in BioCondition) could have known EVNT populations buffered by 2km while "intact" areas (see also the BioCondition method) could be buffered by 5km. This would better reflect the plant collection intensity and knowledge of these two "zones" of Queensland.

The most preferred option, in my opinion, would be for the EHP to scrap the trigger map altogether and formulate guidelines for consultants to follow to determine the likelihood of occurrence of EVNT plant species through desktop analysis. I cannot think of one instance where I have tried to convince a client that an EVNT plant search was warranted when it wasn't.

4.   What the future holds

The Government's "Green Tape" reduction measures and a slowdown in the resource sector have resulted in far ranging impacts. Not only have these changes to policy and procedures had a major direct impact on environmental consultancies across the State but would also have indirectly impacted on associated services that we utilise when we undertake field surveys: accommodation, car hire, grocery purchases etc. If the trigger map is not reviewed and a different approach formulated then this will lead to the destruction of many populations of protected plants, thereby exacerbating the threats on remaining EVNT plant populations.

5.   About the author

I am an environmental consultant but primarily I am a botanist and a scientist who believes in scientific principles and approaches. I did not become a botanist to seek out fame and fortune but became a botanist because of a joy and appreciation I have for the plant world and a belief in ecologically sustainable development and that environmental impacts associated with major projects can be minimised. So when the government of the day pushes its agenda and produces poor policy and/or poor maps, I feel angry. The Protected Plant Flora Survey Trigger Map is an example of a poorly thought out policy and approach that will not benefit the protected plants of Queensland.